REMARKS ON A SMALL COLLECTION OF COCCIDAE FROM NORTHERN AUSTRALIA.

By E. Ernest Green, F.E.S.

The material under consideration was collected by Mr. G. F. Hill, Government Entomologist, at, or in the neighbourhood of, Port Darwin, in the Northern Territory of Australia. It consists principally of cosmopolitan species, two only being peculiar to the country.

Aspidiotus (Chrysomphalus) fodiens, Mask.

" On *Pithecolobium moniliferum* ; Darwin, N. T., 1. ii. 1914."

The insects are densely massed on the under surface of the leaves and occur—though not in quite such large numbers—on the upper surface also. Male and female puparia are mingled together in approximately equal numbers.

I have no hesitation in determining this insect as *fodiens*, though it is remarkable that the infested leaves show no indication of the " pitting " described by Maskell as characteristic of the species, which derives its name, indeed, from this very peculiarity. All the structural characters of the insect itself are in close agreement both with Maskell's somewhat loose diagnosis and with Leonardi's more careful description (said to have been drawn up from typical examples). Maskell's figures are unfortunately quite unreliable, the different parts being represented out of all due proportion to each other. But one character to which he particularly draws attention (even exaggerating it in his figure) is a strongly developed acuminate marginal prominence on each side of the pygidium, just outside the last fimbriate squame. This prominence is particularly well marked in the present examples (*vide* fig. 1). Leonardi's figure—otherwise admirable—does not sufficiently accentuate this feature.

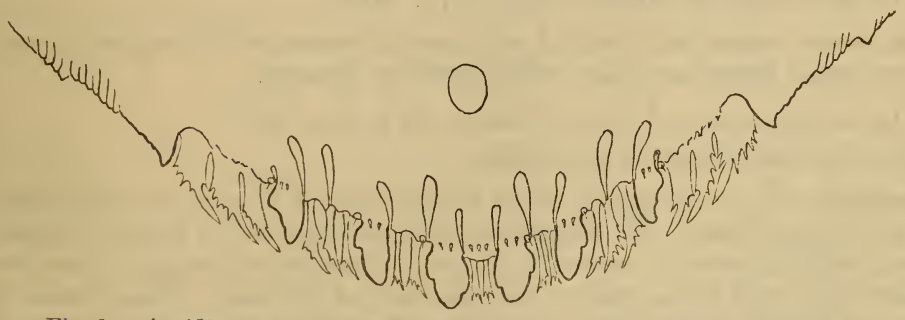

Fig. 1. *Aspidiotus fodiens*, Mask. ; pygidium of adult female, × 600.

The fact that these specimens are not associated with depressions in the leaves upon which they rest is of no specific importance. The phenomenon is probably dependent upon the nature of the tissues of the plant involved. Maskell's typical examples of *fodiens* were occupying depressions in the leaf of an undetermined species of *Acacia*.

I have noticed a similar difference in habit with *Aspidiotus putearius*, in Ceylon, a species which is associated with still more pronounced pits when occurring on leaves of *Strobilanthes viscosus*, while the same insect attacks other species of *Strobilanthes* without any such result.

Aspidiotus fodiens is known from Australia only.

Aspidiotus orientalis, Newst.

" On banana leaves and on papaw fruit and leaves ; Darwin, N. T., 1. i. 1914."

The examples submitted appear to be on the dried rind of the papaw (*Papaya carica*), where they occur in large and dense clusters containing both sexes.

This species has not previously been recorded from the Australian region. It occurs commonly, upon various plants, in India and Ceylon, and I have examples collected in Arabia.

Aspidiotus (Chrysomphalus) ficus, Ashm.

This cosmopolitan species is represented by heavily infested leaves of coconut palm, " Darwin, N. T., 10. xii. 1913." Also, in association with *Mytilaspis citricola*, on *Citrus acida*, " Botanic Gardens, Darwin, N. T., 12. xii. 1913."

Aspidiotus destructor, Sign.

" On leaves of the coconut palm ; Botanic Gardens, Darwin, N. T., 11. vi. 1913."

Hemichionaspis minor, Mask.

(*a*) " On *Buchanania* sp. ; Darwin, N. T., 24. i. 1914."

The infestation has been very heavy, but has been most effectively checked by the agency of natural enemies. Every single individual (and there must have been several thousands of them on a single leaf) has been destroyed either by Coccinellid beetles or Chalcid parasites. Had it not been for the empty skins of such specimens as had fallen victims to the Chalcid, I should have been unable to determine the species. Where the Coccinellid has been at work, nothing remains but fragments of the puparia.

(*b*) " On Kurrajong tree ; Darwin, N. T., 24. i. 1914."

This sample consists principally of male puparia, massed on the twigs of the tree. The few female insects have been exterminated by parasites.

(*c*) " On indigenous vine, *Vitis* sp. ; Darwin, N. T., 2. ii. 1914."

The same remarks apply to this sample.

Hemichion. minor is recognised, in the United States of America, as an important pest of the cotton plant. The Department of Entomology of that country has been seriously studying means of combating the pest and has deputed one of its specialists to search the world for an effective natural enemy of the insect. Consideration of the above samples suggests that such an enemy might be looked for in Northern Australia, with some hope of success.

Chionaspis dilatata, Green.

" On *Pandanus odoratissimus* ; Darwin, N. T., 24. i. 1914."

This species appears to be widely distributed throughout the Oriental region, but has not hitherto been recorded from Australia. *Ch. eugeniae*, Maskell, to which it is closely allied, differs from *dilatata* in having the pygidium broadly rounded and the median lobes more widely divergent. The species appears to be held in check (in Australia) by the same parasites that affect *Hemichion. minor*.

Mytilaspis citricola, Packard.

" On lime trees (*Citrus acida*) ; Botanic Gardens, Darwin, N. T., 12. ii. 1913."

The leaves submitted are thickly covered on their upper surface with the mingled puparia of this species and *M. pallida*. These samples show no signs of parasitisation.

Mytilaspis pallida, Green.

" On lime trees (*Citrus acida*) ; Botanic Gardens, Darwin, N. T., 12. ii. 1913."

Intimately associated with *M. citricola* (as noticed above).

This species differs from *citricola* in the very narrow parallel-sided puparium of the female. It may be readily distinguished from *gloveri* (which it otherwise closely resembles) by its pale ochreous colour, the puparium of *gloveri* being deep reddish brown.

Parlatoria ziziphus, Lucas.

" On lime tree (*Citrus acida*) ; Darwin, N. T., 20. iv. 1913."

The insects are massed on both surfaces of the leaves to an extent that must have been most deleterious to the health of the plant.

Lecanium (Saissetia) hemisphaericum, Targ.

" On undetermined shrubs and weeds; Botanic Gardens, Darwin, N.T., 10. x. 1913."

Lecanium pseudexpansum, sp. nov.

Adult female (fig. 2, *b*) broad and flat ; broadly oval, often of very irregular outline.

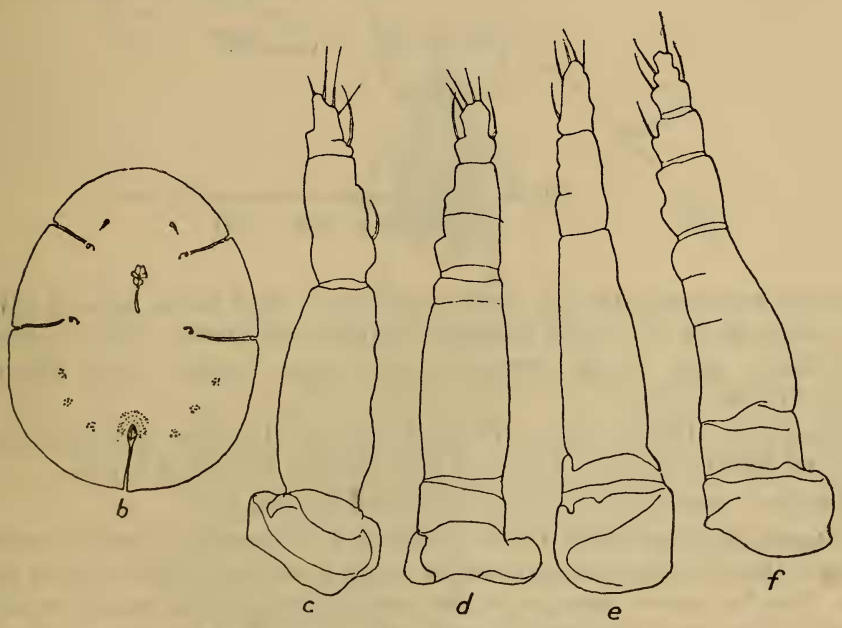

Fig. 2. *Lecanium pseudexpansum*, sp. nov. ; *b*, adult female, × 9; *c-f*, various forms of antennae, × 600.

Colour pale fulvous or ochreous ; often marbled with dark brown, and usually with a submarginal narrow dark brown zone. Surface (under magnification) minutely pustulate ; appearing smooth and shining to the naked eye, but with indications of

shallow polygonal depressions covered by glassy concentrically marked plates of colourless secretion. Antennae (fig. 2, *c–f*) small, with confused and often distorted joints. Usually 6 joints can be distinguished, of which the 3rd far exceeds in length any of the others. Legs altogether absent. Stigmatic area (fig. 3) deeply incised, the inner margin rounded and thickened. Stigmatic spines three, approximately of equal size, stout, round or bluntly pointed at extremity; the centre spine is set further back than the other two, and consequently appears shorter, though occasionally it is longer and projects beyond the others. A shallow groove on the ventral surface extends from each stigmatic cleft to the corresponding spiracle. Marginal setae simple, pointed, about one-third the length of the stigmatic spines. Anal cleft occupying approximately one-fifth of the total length of the body. Valves of anal operculum triangular, the distal angle acute, the lateral angle obtuse. On the venter, immediately in front of the anal ring, are three concentric arches composed of groups of

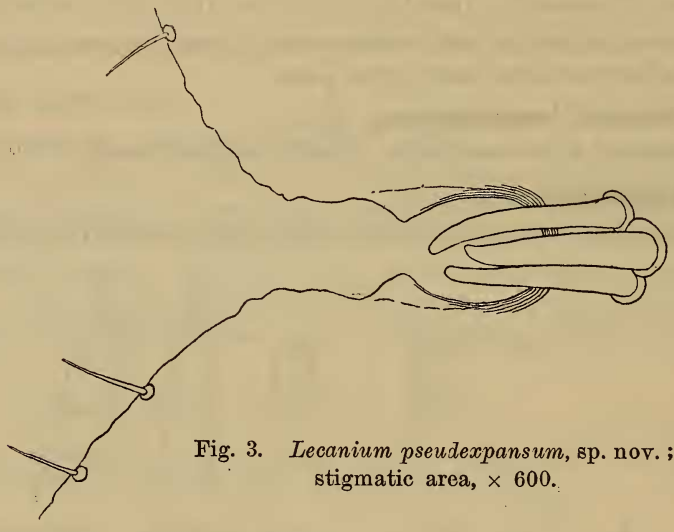

Fig. 3. *Lecanium pseudexpansum*, sp. nov.; stigmatic area, × 600.

small dorsal ceriferous pores, and there are groups of small dorsal pores at intervals on the medio-lateral area of the abdomen. Crowded subcircular cells are noticeable in the thicker parts of the derm, near the margin. Length, 4·25 to 5·50 mm.; breadth, 3·50 to 4 mm.

Male puparium glassy, divided by raised lines into 18 plates, of which three are central and fifteen marginal. Length, 2 to 2·50 mm.; breadth, 1·25 mm.

" On *Pandanus odoratissimus*; Koolpinyah, near Darwin, N.T."

The superficial resemblance of this species to *L. expansum* is quite remarkable; so much so, that I was at first prepared to accept it as such, without further examination. But the simple character of the marginal setae (which are flabelliform in *expansum*) places *pseudexpansum* in quite another section of the genus. Nor is the resemblance purely superficial, for the structure of the antennae, the absence of limbs, and the disposition of the pre-anal ceriferous pores, are all common to the two species. The male puparia of the two species are indistinguishable.